

REMARKS

Applicants thank the Examiner for the consideration given the present application. Claims 1-15 are actively pending, claims 16-19 being withdrawn from consideration.

Drawing Objection

The drawings are objected to on the grounds they do not depict the three composite layers of the membrane specifically, the non-porous and porous layers as recited in claims 1 and 8-15.

By the present Amendment, the specification is amended to describe attached FIG. 9, as well as porous and non-porous layers 90 and 95. As noted, Fig. 9 is a perspective view of an example of a three-layer composite hollow fiber, in which reference numeral 90 designates the porous layer, and reference numeral 95 designates the non-porous layer. Paragraphs [0015], [0020], [0025], [0026], and [0027] of the published application amply demonstrate that FIG. 9 avoids new matter.

In view of accompanying FIG. 9, as well as the foregoing amendments and remarks, withdrawal of the drawing objection is respectfully requested.

Rejection under 35 U.S.C. §103(a)

Applicants respectfully traverse and request reconsideration of the rejection of claims 1-15 under 35 U.S.C. §103(a) as being unpatentable over Yamamori et al. (U.S. 5,922,201) and Watari et al. (U.S. 2002/01487755).

Without acquiescing to any ground of rejection, but merely to expedite prosecution, independent claim 1 is amended to recite a hollow fiber membrane module having a combination of elements, including an anchoring member, wherein an end of a side of a hollow fiber membrane opening of the sheet-form hollow fiber membrane (1) is fastened by the anchoring member so that a plurality of sheet-form hollow fiber membranes are substantially parallel to each other while leaving the end open, the anchoring member

having a first side and an opposing second side, a first end face being substantially rectangular on said first side, outer surfaces of the hollow fiber membranes being exposed at said first end face, and a second end face being substantially circular, that is on said second side of the anchoring member, wherein open ends of the hollow fiber membranes open at said second end face.

In the present invention as set forth in amended independent claim 1, a hollow fiber membrane module includes a sheet-form hollow fiber membrane (1) including a hollow fiber membrane having a non-porous layer, and an anchoring member (2), an end of a side of a hollow fiber membrane opening of the sheet-form hollow fiber membrane (1) being fastened by the anchoring member (2) so that a plurality of sheet-form hollow fiber membranes (1) are substantially parallel to each other while leaving the end open, the anchoring member (2) having a first side and an opposing second side, a first end face being substantially rectangular on said first side, outer surfaces of the hollow fiber membranes being exposed at said first end face, and a second end face being substantially circular.

Applicants respectfully submit that even if the references were combined - for the sake of argument, the claimed inventions would still have been unobvious.

Yamamori fails to disclose or suggest a hollow fiber membrane module having the combination of features and elements, such as in claim 1. Rather, Yamamori merely describes a hollow fiber membrane module that is useful in the filtration of water (See, e.g., Yamanori's claim 1). The Yamamori module comprises (a) hollow fibers formed of polyethylene or polypropylene, (b) two fastening members for fixing the ends of said hollow fibers while leaving said ends open, and (c) two structural members for enclosing and supporting said fastening members. The hollow fibers include a textile fabric containing hollow fibers as a weft. The cross-section of the fastening member perpendicular to the hollow fibers has an elongated rectangular shape. The structural members are disposed at two opposite sides of the textile fabric and are connected by means for adjusting the distance between the structural members.

The secondary reference, Watari et al., relates to a hollow fiber membrane for the degassing of inks preferably having a three-layer structure consisting of a nonporous layer having porous layers disposed on both sides thereof (see paragraph [0009], lines 5-8), but there is no evidence showing the Watari patent would have been combined with Yamamori, or that it would have led a person of ordinary skill in the art, or art to which Applicants' inventions most nearly pertain, to modifying the inapposite structures of Yamamori to arrive at the presently claimed invention.

Applicants respectfully disagree with the characterizations of Yamamori in the Office Action. The hollow fiber membrane module shown in FIG.6 of Yamamori, which is formed from structural member 1, fastening member 2, and outlet for treated water 9, is not identical to the hollow fiber membrane module of the presently claimed invention.

The Office Action compares Applicants' claimed invention and FIG. 2 of Yamamori. In FIG. 2 of Yamamori, the aperture of structural member 1, in which fastening member 2 is filled and secured together with hollow fibers, should be such that a cross-section of fastening member 2, perpendicular to the hollow fibers, has the shape of an elongated rectangle (see column 3, lines 30-34).

Yamamori's outlet for treated water 9, which has a cylindrical shape, is merely connected to a side face of structural member 1, but does not form part of fastening member 2.

In contrast, in Applicants' amended claims 1 and 2, a second end face of an anchoring member (2) is substantially circular on a second side of the anchoring member (2). The anchoring member (2) has a cylindrical section, and the cylindrical section has a substantially cylindrical shape on the second side of the anchoring member (2).

An end face of the anchoring member (2) on a side where the hollow fiber membranes (1) are exposed, has the shape of a rectangle, and the end face of the anchoring member (2) on a side where the hollow fiber membranes (1) open is circular. In other words, the end face of rectangle shape and the end face of the circular shape are compositions of the anchoring member (2), and these end faces are incorporated in the anchoring member (2).

In the presently claimed invention, end faces having specific shapes in the fastening member results in excellent anti-pressure and also achieve a good balance between detergency and accumulation of the hollow fiber membrane. These characteristics are not disclosed or suggested in any of the cited references, including Yamamori and Watari.

For at least the above reasons, Applicants courteously submit their inventions are not obvious over the cited references, and withdrawal of the outstanding rejections is respectfully requested. There being no other issues, it is respectfully submitted that the present application is in condition for allowance, and prompt passage to issue is respectfully requested. However, if the Examiner still has questions, he is cordially invited to telephone the undersigned in an effort to successfully conclude prosecution.

Applicants hereby request any required extension of time not otherwise requested and hereby authorizes the Commissioner to charge any omitted fee required to effect entry of this Amendment, including application processing, extension, extra claims, statutory disclaimer, issue, and publication fees, to Deposit Account No. 06-1135 with reference to Order No. 7412-88137.

Respectfully submitted,
FITCH, EVEN, TABIN & FLANNERY

BY:

/Kendrew H. Colton/
Kendrew H. Colton, #30,368

Customer No. 42798
One Lafayette Centre
1120 - 20th Street, NW
Suite 750, South
Washington, DC 20036
202-419-7000 (telephone)
202-419-7007 (telecopier)